

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: PAUL ENTWISTLE)
Applicant: 09/488,183)
Filing Date: January 20, 2000)
For: Improvements Relating To)
Television Guide System)
Art Unit:)

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TRANSMITTAL OF PRIORITY DOCUMENT

Assistant Commissioner for Patents
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Dear Sir:


Enclosed herewith is a certified copy of British Patent Application No. 9903220.3 for which the above-identified patent application claims priority from.

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Respectfully Submitted

HEAD, JOHNSON & KACHIGIAN

Date: Feb 16, 2000


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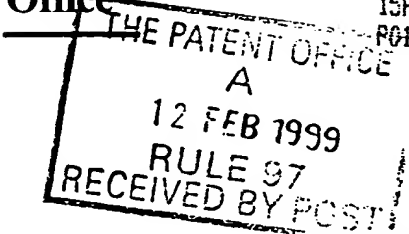
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Dated 20 January 2000

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The Patent Office

Cardiff Road
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Gwent NP9 1RH

1. Your reference **GW2G28037**

2. Patent application number
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12 FEB 1999

9903220.3

3. Full name, address and postcode of the or of each applicant (underline all surnames)

Pace Micro Technology Plc

Victoria Road
Saltaire
Shipley
BD18 3LF

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

U.K

6905293001

4. Title of the invention **IMPROVEMENTS RELATING TO TELEVISION GUIDE SYSTEM**

5. Name of your agent (if you have one) **Bailey Walsh & Co.**

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

5, York Place
Leeds
LS1 2SD

Patents ADP number (if you know it)

224001

6. If you are declaring priority from one or more earlier patent applications, give the and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number	Country	Priority application number (if you know it)	Date of filing (day / month / years)

7. If this application is divided or otherwise derived from an earlier UK application, the earlier application	Number of earlier application	Date of filing (day / month / years)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer "Yes" if:

Yes

- a) any applicant named in part 3 is not an inventor, or
 - b) there is an inventor who is not named as an applicant, or
 - c) any named applicant is a corporate body
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9. Enter the number of sheets for any of the following claims you are filing with this form. Do not count copies of the same document.

Continuation sheets of this form

Description

6

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Claim(s)

Abstract

Drawing(s)

2

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10. If you are also filing any of the following, state how many of each item.

Priority Documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (Please specify)

11. I/We request the grant of a patent on the basis of this application

Signature

Baldy Walsh

Date

11.02.99

12. Name and daytime telephone number of person to contact in the United Kingdom

G Wood
0113 2433824

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Improvements Relating to Television Guide System

The invention to which this invention relates is to the generation and control of an electronic programme guide (EPG) of the type which is generated on a television display screen and transmitted and received from a remote broadcast location.

An EPG and data relating to the same is typically transmitted at regular intervals or continuously to allow the guide to be generated and displayed and/or updated as required. The EPG is an increasingly important requirement in television broadcasting systems as the number of channel which can be received increases. The EPG systems are frequently improved as the guide or the broadcast systems upon which the same are carried are improved and progressed.

One problem is the increased ability to control the display of programmes at the viewer location to suit the viewer's wishes. This means that if, for example, the viewer is watching a programme and wishes to interrupt the programme but not miss the remainder of the programme they can decide to store in the local memory of the apparatus the remainder of the programme, and then recommence viewing of the shared programme at the desired time. This feature may be of particular importance in the future and the problem with this is that the delaying of the transmission of the programme at a location means that the display of the programme at that location and subsequent programmes. are then out of synchronisation with the EPG which is transmitted to that location. This can be confusing and/or irritating to the viewer.

The aim of the present invention is to provide a system whereby the delaying or altering of the viewing of a programme is taken into

account in the generation of the electronic programme guide at that location or locations.

In a first aspect of the invention there is provided television broadcasting apparatus which allows the display of a series of programmes at at least one location, means for receiving details relating to and for generating an electronic programme guide at said location which indicates a schedule of programmes which can be displayed, and means whereby the display of a programme or programmes can be delayed and/or interrupted and the remaining programme and/or subsequent programmes held in a memory for selective display at a later time and wherein the electronic programme guide at that location is adjusted in response to the delay in display in the remainder and/or subsequent programmes so as to maintain the synchronisation of the adjusted electronic programme guide details with the display of the remainder of the programme and/or subsequent programmes.

Thus, according to the invention, the schedule of the electronic programme guide is linked to the use of the local memory so as to automatically reflect scheduling adjustments caused by the time shifting of broadcast programmes by the viewer. The inclusion of programme delay means and memory in set top boxes has allowed the ability to pause a broadcast programme and continue watching later to become possible and this has given rise to the problem of displaying the start and end times within an EPG accurately as the start and end times are adjusted in response to the local viewer operation of the storage device instead of the original transmitted schedule.

By providing for the automatic and interactive modification and presentation of the EPG schedule at specific locations so as to represent the time shifting which may occur in the display of the

remainder of a programme or subsequent programmes, so the EPG can be kept in synchronisation and display to the viewer the correct start and end times. This allows the viewer to organise their viewing knowing when time displaced broadcast programme and subsequent programmes will finish. Furthermore, they can schedule to watch, for example, a particular programme whilst pausing another which they were previously watching and then restarting the original programme and the EPG will adjust accordingly. The method of automatic temporal shifting within the EPG allows the selection to be made by locally processing the broadcast schedule.

Specific embodiments of the invention will now be described with reference to the accompanying diagrams wherein:-

Figure 1 indicates a typical EPG schedule;

Figure 2 indicates the schedule of Figure 1 with highlighted viewing choices;

Figure 3 illustrates the adjustments to the EPG made in one embodiment of the invention;

Figure 4 illustrates an alternative embodiment of an EPG according to the invention; and

Figure 5 illustrates a yet further embodiment of the invention.

At the present time, it is possible for a viewer to record onto a storage device such as a hard disc drive, (HDD) local apparatus such as a set top box signal receiver details of a programme or programme channel whilst it is being viewed and this allows the viewer to pause and then recommence watching that channel by

locally storing the broadcast channel data during the pause stage. When the continue viewing function is activated the programme continues from the HDD at the point when pause occurred and is then viewed by the viewer. However, writing of programme material which has been transmitted and received in that time is contained and stored in a time buffer. The buffer therefore represents time shifted programme material such as an entire broadcast channel or potentially multiplex and the EPG is required to reflect the fact that the programme material associated with that channel needs to be locally offset by the time buffer so that the EPG reflects the schedule for that particular viewer and not the previous schedule which has been transmitted to all viewers.

One possibility is to represent this by "slipping" the row in the EPG which relates to the channel which has been delayed and the extent of this "slippage" is determined by the buffer quantity. A further enhancement could be to show the original channel row as that is still accessible to be viewed immediately by the viewer, and add an additional channel which reflects the contents of the HDD so as to illustrate to the viewer the slippage extent and allow the viewer to select which source to watch. A yet further embodiment is to represent the duration of programmes as rectangular areas and to illustrate displacement through use of the delay facility by diagonal lines which highlight the skew between the broadcast and the stored schedules at the particular location. A yet further scenario is to only show the time displacement of an individual programme on that channel rather than the whole channel so that for example a film could be paused to watch the news, and the EPG displays the skewed end time of the film only and allows further viewing planning to be undertaken.

Figure 1 illustrates a typical EPG schedule for 3 channels, namely Ch1, Ch2 and Ch3 and shows the schedule of programmes from 7

o'clock to 9 o'clock. Normally, the user or viewer of the EPG will highlight the viewing choices, as shown in Figure 2, so that for example they are watching between 7 and 7.30 channel 1, then between 7.30 and 8.30 channel 2 and wish to watch the news at 8.00 and music at 9.00 on channel 3. It will be seen however that these selections overlap and by using the storage system of the apparatus the film of channel 2 can be interrupted so that the news on channel 3 can be watched at the appropriate time as shown in figure 3. This shows that the viewing of the film is continued from the storage device at the viewer location so that the end of the film can be watched, but this will then be out of synchronisation with the schedule of figure 2, so that the film in fact ends at 9 o'clock in Figure 3 as opposed to 8.30 in Figure 2. Thus, with Figure 3, the EPG schedule is locally reprocessed to reflect the new viewing times, i.e. the film is delayed from starting until the selection on channel 1 is complete and thus the start of the film is stored in the local memory. When the film is started from the memory then the viewing of that is interrupted by the insertion of the news from Channel 3 which is shown live and the remainder of the film is paused.

An alternative method of displaying the process schedule data is shown in Figure 4 which shows a "slipped" channel representation which represents the data which is being stored on the HDD memory. Thus, it is shown that in Channel 1 the term "Some TV" is being watched and the film started on Channel 2 while Channel 1 was being watched but the new line HDD indicates when the actual film started as it was previously being stored in HDD and so represents to the viewer the change in schedule.

A yet further alternative arrangement is shown in Figure 5 wherein a static selected viewing channel can be displayed that always remains visible even when the channels are scrolled down so that in figure 5

it is shown that the top line indicates the highlighted viewing which is "some TV" followed by "film" followed by "news" followed by "film" and then music while the remainder of the schedule indicates to the viewer what changes have occurred in the EPG schedule as a result of the viewing which has taken place.

A typical EPG schedule :

Figure 1

7.00		7.30		8.00		8.30		9.00		
Ch1	Some TV		Next programme ...					Even more ..		
Ch2	.....		Film starts .....					.....
Ch3	Soap ...			News		Even more soap			Music	

User highlights viewing choices :

Figure 2

	7.00	7.30	8.00	8.30	9.00
Ch1	Some TV	Next programme ...			Even more ..
Ch2	.....	Film starts .....			.....
Ch3	Soap ...		News	Even more soap	Music

	7.00	7.30	8.00	8.30	9.00
Ch1	Some TV	Next programme ...			Even more ..
Ch2	Film	Film continues		
Ch3	Soap ...		News	Even more soap	Music

Figure 3

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A more basic method of displaying the processed schedule data is shown below :
This shows a "slipped" channel representing the data being stored on the HDD.

	7.00	7.30	8.00	8.30	9.00
Ch1	Some TV	Next programme ...			Even more ..
Ch2	.....	Film starts ..			.....
hdd	.....	Film starts ..			...
Ch3	Soap ...		News	Even more soap	
					Music

Figure 4

Further, a static "selected viewing" channel can be displayed that always remains visible even when the channels are scrolled down. Another enhancement might keep those channels with selected content also visible :

	Some TV		Film	News	Film continues		Music
	7.00	7.30	8.00	8.30	9.00		
Ch1	Some TV		Next programme ...				Even more ..
Ch2	.....	Film	Film continues				
Ch3	Soap ...			News	Even more soap		Music
Ch44	Old TV ...		Special interest		Hobby TV ...		
Ch45	News	Sports					
Ch46	Other sports					More sport ..	

Figure 5

Finally, the viewer could choose to "fast forward" (the locally buffered portion of) the film in the example, such that it was possible to catch the start of the "music" programme. Again, this invention can automatically adjust the EPG schedule to reflect the users inferred control of the storage device.

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